

# The CRIRSCO Reporting Codes and the UNFC: Do we really need separate codes for minerals reporting by governments and industry ?

*Edmund Sides (PERC)*

*MinSouth Prestige Lecture*

*London, 13<sup>th</sup> June 2024*



- Professional
  - Chairperson, PERC
  - Deputy Chair, CRIRSCO
  - IGI representative on PERC
  - PERC representative on CRIRSCO
- Consultancy
- Director – Orebody Risks Limited
- > 30 years of relevant experience
- Main experience:
  - Orogenic gold, volcanic-hosted massive sulphide base metal and porphyry copper deposits;
- Significant experience:
  - Rare earth elements , iron ore, platinum group metals and carbonate-hosted lead-zinc;

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## The **Pan-European Reserves and Resources Reporting Committee**

- A 'not-for-profit' organisation registered in Brussels
- Association of six professional organisations
- Developed & maintains the PERC Reporting Standard
- A constituent member of CRIRSCO:
  - The **Committee For Mineral Reserves International Reporting Standards**
  - Recognised as the National Reporting Organisation (NRO) responsible for developing mineral reporting standards and guidelines in Europe
- More details available at:
  - [www.percstandard.org](http://www.percstandard.org)
  - [www.crirSCO.com](http://www.crirSCO.com)

- Why do we need Mineral Reporting Standards ?
- Two different types of Mineral Reporting
  - Public Reporting – CRIRSCO codes and standards
  - Non-public reporting - UNFC
- Relevance to the European minerals industry
  - The EU's Critical Raw Materials Act and the UNFC
  - CRIRSCO Template to UNFC Bridging Document
- Summary and conclusions



# Why do we need Mineral Reporting codes and standards ?

*Image: Neves-Corvo mine, Portugal, 2014*

# Mineral Reporting Codes & Standards

System	Date	Main usage
Russian classification system (GKZ)	1927	Used for strategic planning, permitting and taxation by governments in the Soviet Union
Industry Guide 7 (SEC, US)	1933-1934	Issuing and trading of securities (stock exchange)
Mineral Resource Classification System (USBM & USGS)	1943 & 1976	Strategic planning by the US government
JORC Code	1989	Stock exchange reporting (Australasia)
UNFC (UNECE)	1997	Unifying international system for classifying solid minerals and fuels (mainly for use by government organisations)
NI 43-101 legislation	2001	Standards of Disclosure for Mineral Projects within Canada (applicable to all companies offering shares to Canadian investors)
The Reporting Code (EFG-GSL-IMM-IGI)**	2001	Code for Reporting of Mineral Exploration Results, Mineral Resources and Mineral Reserves (to investors and their advisors)
CRIRSCO Template	2006	Public Reporting of Exploration Results, Mineral Resources and Mineral Reserves (to investors and their advisors)

**NOTE:** \*\* Developed into the PERC Reporting Standard





# Financial market regulation

*Image: Toronto Stock Exchange (c. 1937-39), (Alexandra Studios)*

[https://commons.wikimedia.org/wiki/File:New\\_Toronto\\_Stock\\_Exchange\\_trading\\_floor.jpg](https://commons.wikimedia.org/wiki/File:New_Toronto_Stock_Exchange_trading_floor.jpg)

- Project finance
  - Required in order to explore and develop mines
  - Commonly obtained using **equity and debt financing**
  - Most jurisdictions have rules governing access to equity finance
- Government securities laws allow:
  - Companies to sell shares to the public – primary market
  - Public to trade those shares – secondary market
- Subject to misinterpretation and abuse:
  - 1969-1970: Poseidon nickel bubble, Australia
  - 1993-1997: Bre-X fraud, Busang gold deposit, Indonesia
  - 2006-2007: Southwestern Resources Corp., Boka project, China
  - 2024: Red Pine Exploration – Wawa Gold deposit, Ontario



# The IMM's role in Minerals Reporting

## International

**Hoover, Principles of Mining 1909**

**JORC (Australasia) 1972, 1981, 1989**

**CMMI definitions (Denver) 1997**

**CMMI/UNFC definitions (Geneva) 1999**

**NI 43-101 (Canada) 2001**

**CRIRSCO International Reporting Template 2006**

**CRIRSCO Standard Definitions 2011, 2012**

**CRIRSCO International Reporting Template 2013**

**CRIRSCO International Reporting Template 2019**

**1902**

**IMM 'ore-in-sight'**

## European

**1991 IMM definitions**

**2001 The Reporting Code (EFG-GSL-IGI-IMM)**

**2008 PERC Reporting Code**

**2013 PERC Reporting Standard**

**2017 PERC Reporting Standard**

**2021 PERC Reporting Standard**

# 1902: IMM – ‘Ore in Sight’

*“That the Members of the Institution be urged to protect the best interests of the Profession by using their influence in every way possible to prevent and discourage the use of the term “Ore in Sight” except as defined above; and the Council also strongly advise that no ambiguity or mystery in this connection should be tolerated, as they (the Council) consider that such ambiguity is an indication of dishonesty or incompetency.”*

Source: IMM Council, 30<sup>th</sup> September 1902

## APPENDIX.

### “Ore in Sight.”

The Council of the Institution of Mining and Metallurgy recognising the great importance, to the Mining Industry and to the public generally, of the subject dealt with in the *Paper* on “Ore in Sight,” by Mr. J. D. Kendall (*Transactions*, Volume X), appointed a Committee to consider what steps the Institution might usefully take in defining the term “Ore in Sight.”

The views expressed by leading Members of the Profession showed a great divergence of opinion as to the definition of the term.

After due consideration and discussion the Council came to the following decision:—

1. That Members of the Institution should not make use of the term “Ore in Sight,” in their reports, without indicating, in the most explicit manner, the data upon which the estimate is based; and that it is most desirable that estimates should be illustrated by drawings.

2. That as the term “Ore in Sight” is frequently used to indicate two separate factors in an estimate, namely:

(a) Ore Blocked Out—that is Ore exposed on at least three sides within reasonable distance of each other—and

(b) Ore which may be reasonably assumed to exist though not actually “blocked out,”

these two factors should in all cases be kept distinct, as (a) is governed by fixed rules, whilst (b) is dependent upon individual judgment and local experience.

3. That in making use of the term “Ore in Sight,” an Engineer should demonstrate that the Ore so denominated is capable of being profitably extracted under the working conditions obtaining in the district.

4. That the Members of the Institution be urged to protect the best interests of the Profession by using their influence in every way possible to prevent and discourage the use of the term “Ore in Sight” except as defined above; and the Council also strongly advise that no ambiguity or mystery in this connection should be tolerated, as they (the Council) consider that such ambiguity is an indication of dishonesty or incompetency.

By Order of the Council,

C. McDERMID,

Secretary.

SALISBURY HOUSE, LONDON, E.C.,

September 30<sup>th</sup>, 1902.

- Main objective
  - All investors must be placed on an equal footing
  - ‘Level playing field’
- Types of market abuse:
  - Insider dealing:
    - where a person who has information not available to other investors makes use of that information for personal gain
  - Market manipulation:
    - where a person knowingly gives out false or misleading information in order to influence the price of a share for personal gain

Source: [https://en.wikipedia.org/wiki/Market\\_abuse](https://en.wikipedia.org/wiki/Market_abuse) (based on Summaries of EU legislation)

- **Regulations**

- Set requirements for when and how investors are informed about an **issuer's** activities

- **Disclosure**

- The act of releasing all relevant information on a company that may influence an investment decision

- **Material Information**

- Any information about a company or its products that is likely to change the perceived value of a security when it is disclosed to the public

Based on: <https://www.investopedia.com>; and <http://www.businessdictionary.com>





# The CRIRSCO codes and standards (Public Reporting)

*A brief introduction*



# CRIRSCO Codes and Standards

Region	Standard/Code	Year of last update	CRIRSCO template version	NRO
Turkey	The UMREK Code	2022	2019	UMREK
Brazil	CBRR Guide	2022	2019	CBRR
Europe	PERC Reporting Standard	2021	2019	PERC
Kazakhstan	KAZRC Public Reporting Code	2021	2019	KAZRC
Philippines	Philippine Mineral Reporting Code	2020	2019	PMRCC
India	Indian Mineral Industry Code (IMIC)	2019	2013	NACRI
Colombia	ECRR Standard	2018	2013	CCRR
Indonesia	KCMI Code	2017	2013	KCMI
USA	The SME Guide	2017	2013	SME
South Africa	The SAMREC Code	2016	2013	SAMCODES
Chile	Chilean Reporting Code	2015	not stated	Comisión Minera
Canada	CIM Definition Standards	2014	not stated	CIM
Mongolia	The MRC Code	2014	2013	MPIGM
Russia	The NAEN Code	2013	2013	NAEN
Australasia	The JORC Code	2012	2012 definitions	JORC

**NOTE:** Last updated 13-Nov-2023

## NOTES: NRO = National Reporting Organisation

All 15 NROs use identical (or not materially different) definitions for the 16 CRIRSCO defined terms

The Canadian NI 43-101 legislation incorporates by reference the CIM Definition Standards

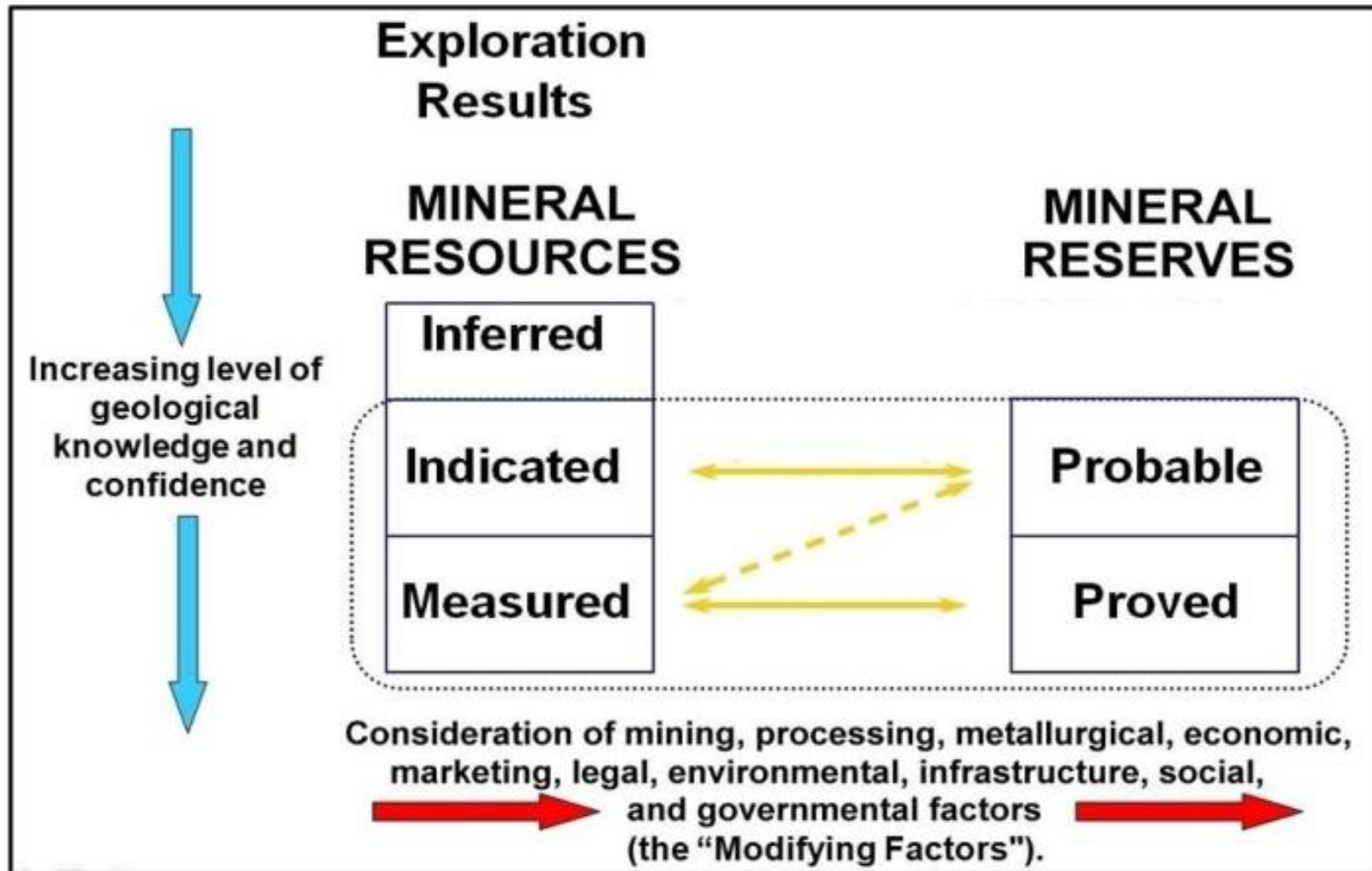
In the USA, the SEC's regulation S-K, subpart 1300, also uses definitions which are closely aligned

- Principles based
  - Transparency, Materiality and Competence
- Public Reporting Guidelines
  - They do not prescribe how estimations should be done
- CRIRSCO International reporting template
  - Common definitions of 16 important terms
  - Table 1 checklist of assessment criteria
- Other considerations
  - Other regulations (e.g. NI 43-101 Form F1)

For more details download the CRIRSCO Template from:

- <https://crirSCO.com/wp-content/uploads/2023/10/The-CRIRSCO-International-Reporting-Template.pdf>

# CRIRSCO Template – Figure 1

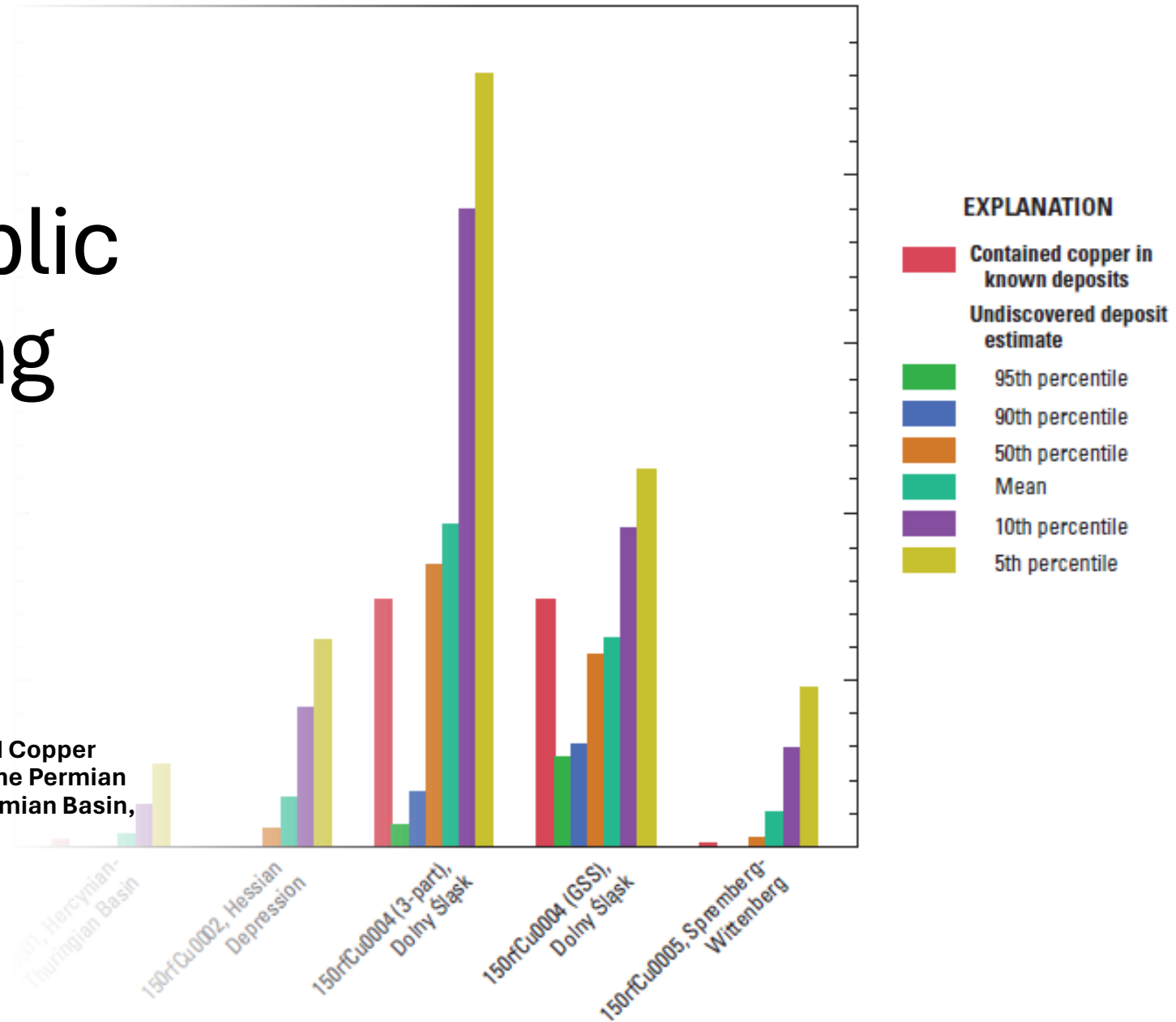


Source: The CRIRSCO template (2019) [www.crirSCO.org](http://www.crirSCO.org)

# Non-Public Reporting and the UNFC

Image from:

Assessment of Undiscovered Copper Resources Associated with the Permian Kupferschiefer, Southern Permian Basin, Europe (USGS, 2010)



# What is Non-Public Reporting ?

- Definition

- No formal definition in the CRIRSCO Codes
- Referred to by several stock exchanges
- Generally understood to mean
  - The generation of reports which are not intended for public dissemination, but...
  - Also includes estimates based on conceptual and theoretical studies

- Examples

- Reports to government for licence applications or renewal
- Reports to government on 'mineral inventory' for use in strategic planning
- Reports to accompany planning applications
- Internal reports used for strategic planning



# Differing Requirements ?

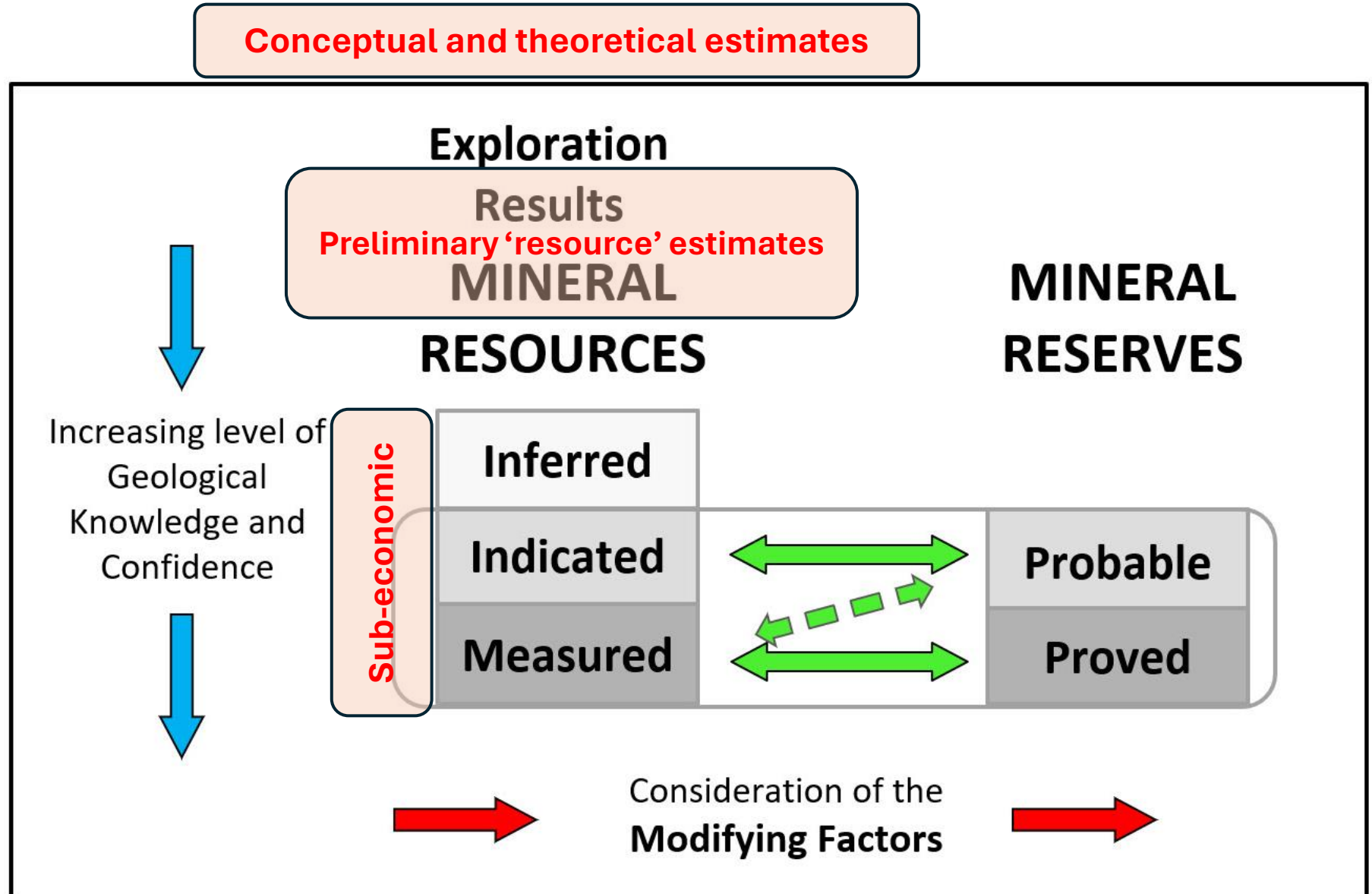
## Strategic planning

- Inventory of mineral assets
- Information for use in strategic planning of infrastructure, land use, etc.
- Potential for future discoveries
- Potential social and environmental effects of minerals related activities
- Information about closure planning
- Estimates may include material that is not considered to be economically extractable
- May include estimates of undiscovered material

## Investment decisions

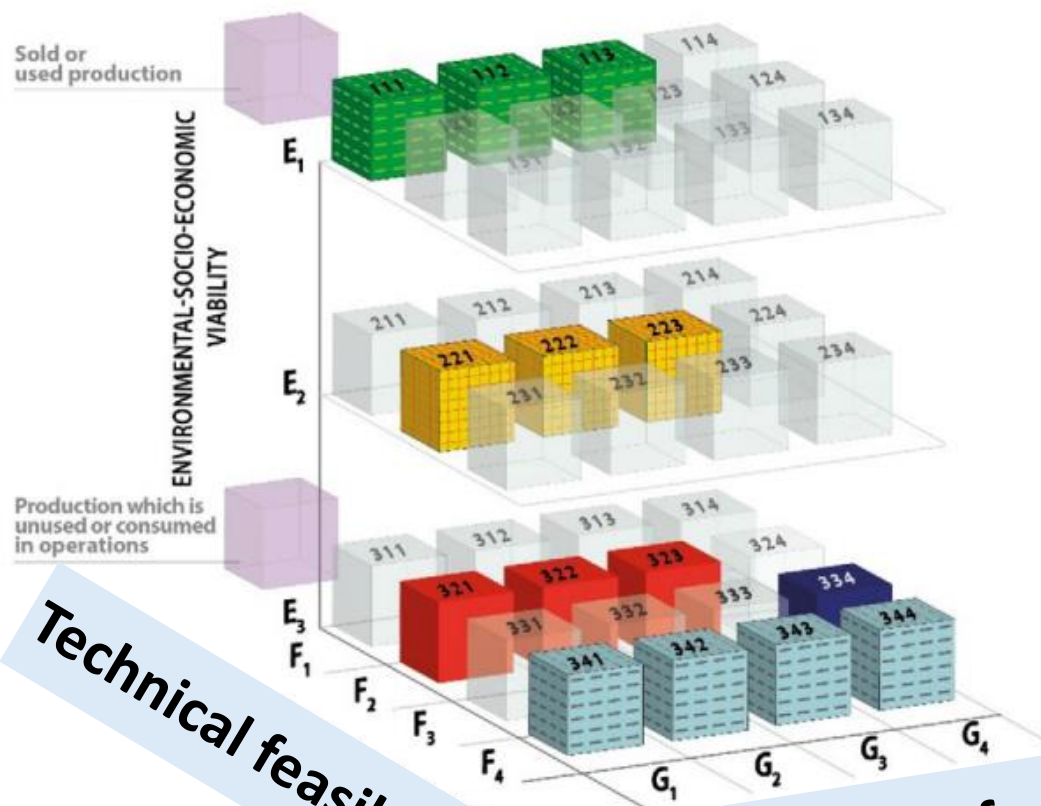
- Information about an investment opportunity
- Economic viability of specific projects
- Risks related to project outcomes
- Estimates related to a specific extraction scenario
- Minerals material should have prospects for economic extraction
- Estimates relate to specific known occurrences which a company has the rights to explore and/or exploit

# Figure 1 – PERC (CRIRSCO)



# United Nations Framework Classification for Resources (UNFC)

Environmental-socio-economic  
viability (E)



Technical feasibility (F)

Degree of confidence  
in the estimate (G)

**Application:** “solar, wind, geothermal, hydro-marine, bioenergy, injection for storage, hydrocarbons, **minerals**, nuclear fuels and water”

Source:

[https://unece.org/DAM/energy/se/pdfs/UNFC/publ/UNFC\\_ES61\\_Update\\_2019.pdf](https://unece.org/DAM/energy/se/pdfs/UNFC/publ/UNFC_ES61_Update_2019.pdf)

# UNFC: Primary Classes & Categories

## Abbreviated Version of UNFC, showing Primary Classes

Total Products	Produced	Sold or used production			
		Production which is unused or consumed in operations <sup>a</sup>			
		Class	Minimum Categories		
			E	F	G <sup>b</sup>
	The project's environmental-socio-economic viability and technical feasibility has been confirmed	Viable Projects <sup>c</sup>	1	1	1, 2, 3
	The project's environmental-socio-economic viability and/or technical feasibility has yet to be confirmed	Potentially Viable Projects <sup>d</sup>	2 <sup>e</sup>	2	1, 2, 3
		Non-Viable Projects <sup>f</sup>	3	2	1, 2, 3
	Remaining products not developed from identified projects <sup>g</sup>		3	4	1, 2, 3
	There is insufficient information on the source to assess the project's environmental-socio-economic viability and technical feasibility	Prospective Projects	3	3	4
	Remaining products not developed from prospective projects <sup>g</sup>		3	4	4

Source: [https://unece.org/DAM/energy/se/pdfs/UNFC/publ/UNFC\\_ES61\\_Update\\_2019.pdf](https://unece.org/DAM/energy/se/pdfs/UNFC/publ/UNFC_ES61_Update_2019.pdf)

- UNFC is applied in two slightly different ways:
  - Classification of estimates of a specified volume on an individual minerals project
    - Provides a framework for reporting estimates in a standardised manner.
    - Facilitates the incorporation of such estimates into mineral inventory databases held by companies, government bodies or other parties.
  - Classification of minerals projects (2009 onwards)
    - Provides a framework for comparing raw materials projects across the spectrum from exploration to extraction, processing, and recycling.
    - Facilitates project classification and monitoring.



## Bridging Document

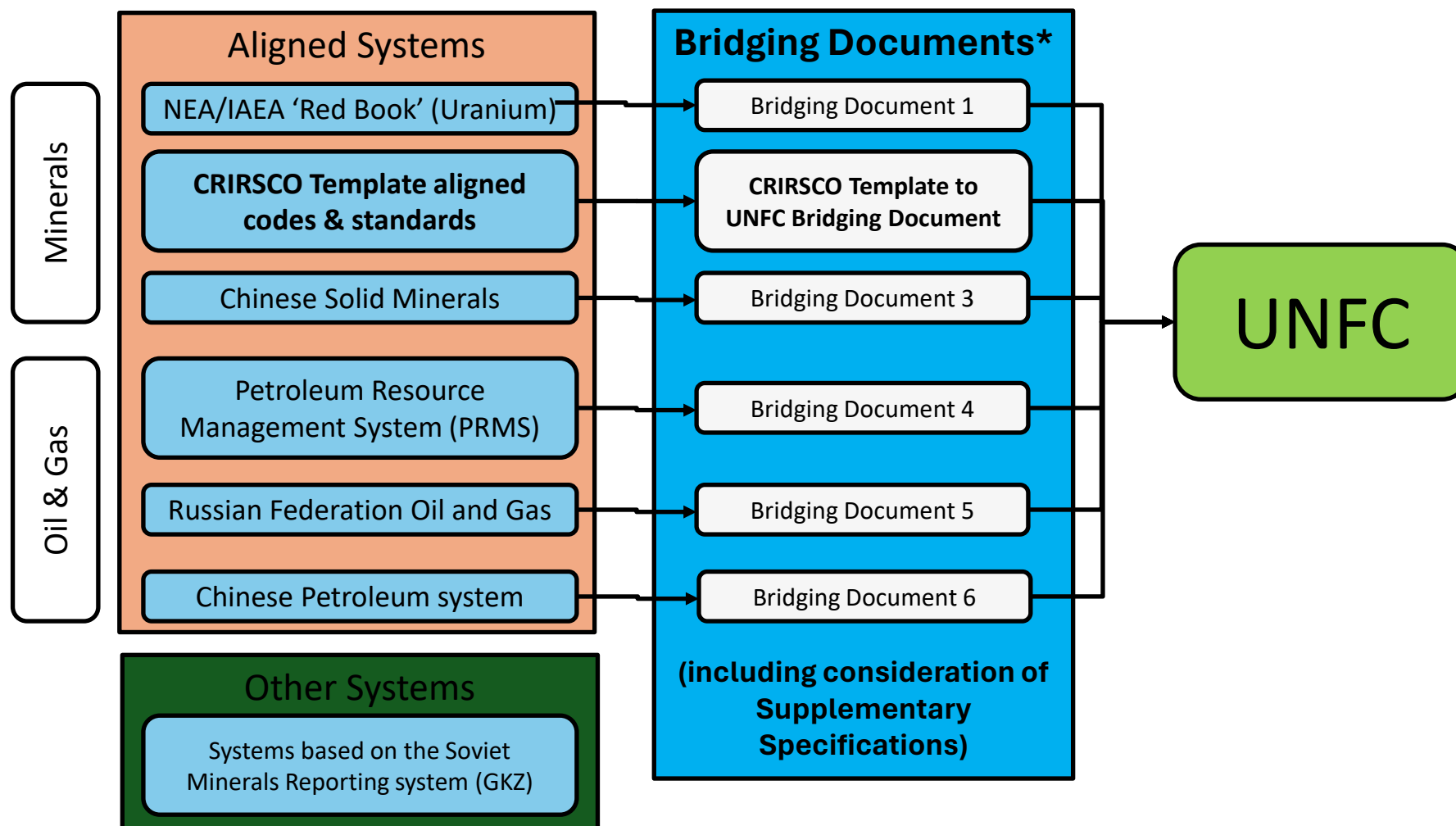
- A document that explains the relationship between UNFC and another classification system, including instructions and guidelines on how to classify estimates generated by application of that system using UNFC Numerical Codes.

## Aligned System

- A classification system that has been aligned with UNFC as demonstrated by the existence of a Bridging Document that has been endorsed by the Expert Group on Resource Management.

Source: [https://unece.org/DAM/energy/se/pdfs/UNFC/publ/UNFC\\_ES61\\_Update\\_2019.pdf](https://unece.org/DAM/energy/se/pdfs/UNFC/publ/UNFC_ES61_Update_2019.pdf)

# Aligned Systems & Bridging



\*Available to download from: [https://unece.org/sustainable-energy/sustainable-resource-management/unfc-documents#accordion\\_1](https://unece.org/sustainable-energy/sustainable-resource-management/unfc-documents#accordion_1)

# The UNFC's relevance to the European minerals industry

Image from: ORAMA (2019)

[https://weee-forum.org/wp-content/uploads/2019/12/ORAMA\\_Final\\_report-digital.pdf](https://weee-forum.org/wp-content/uploads/2019/12/ORAMA_Final_report-digital.pdf)

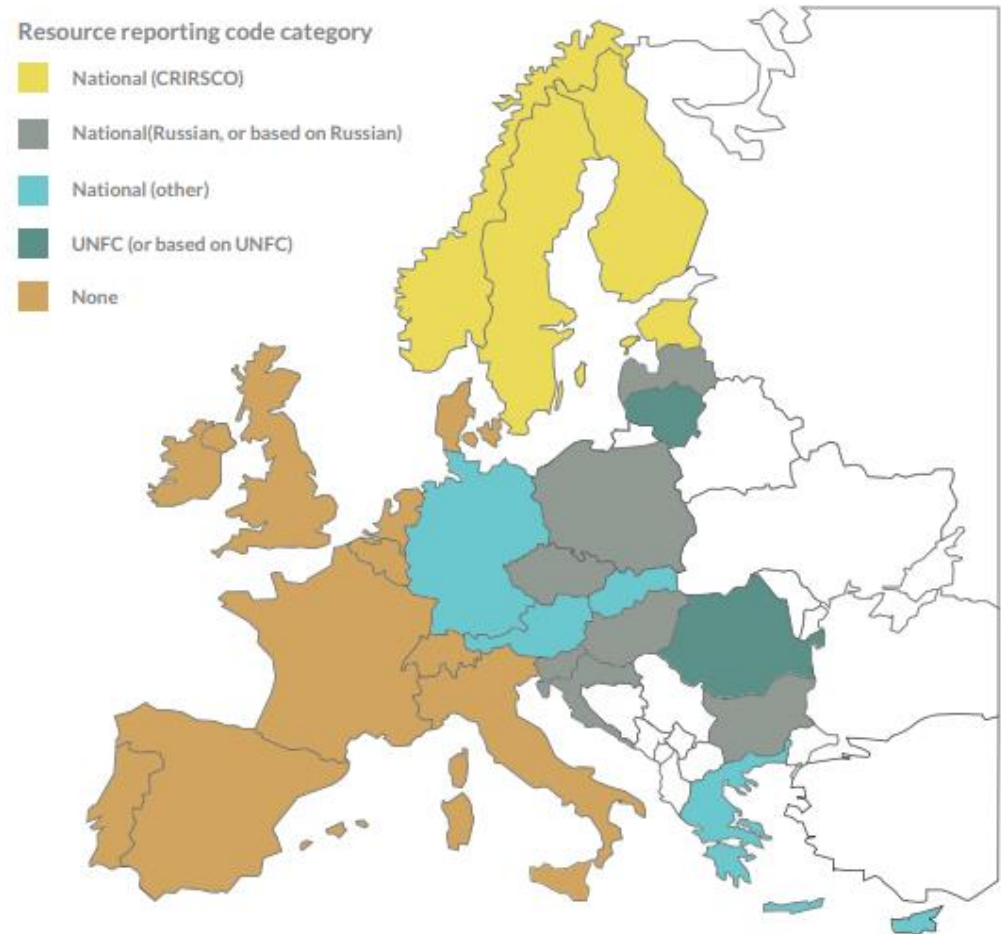
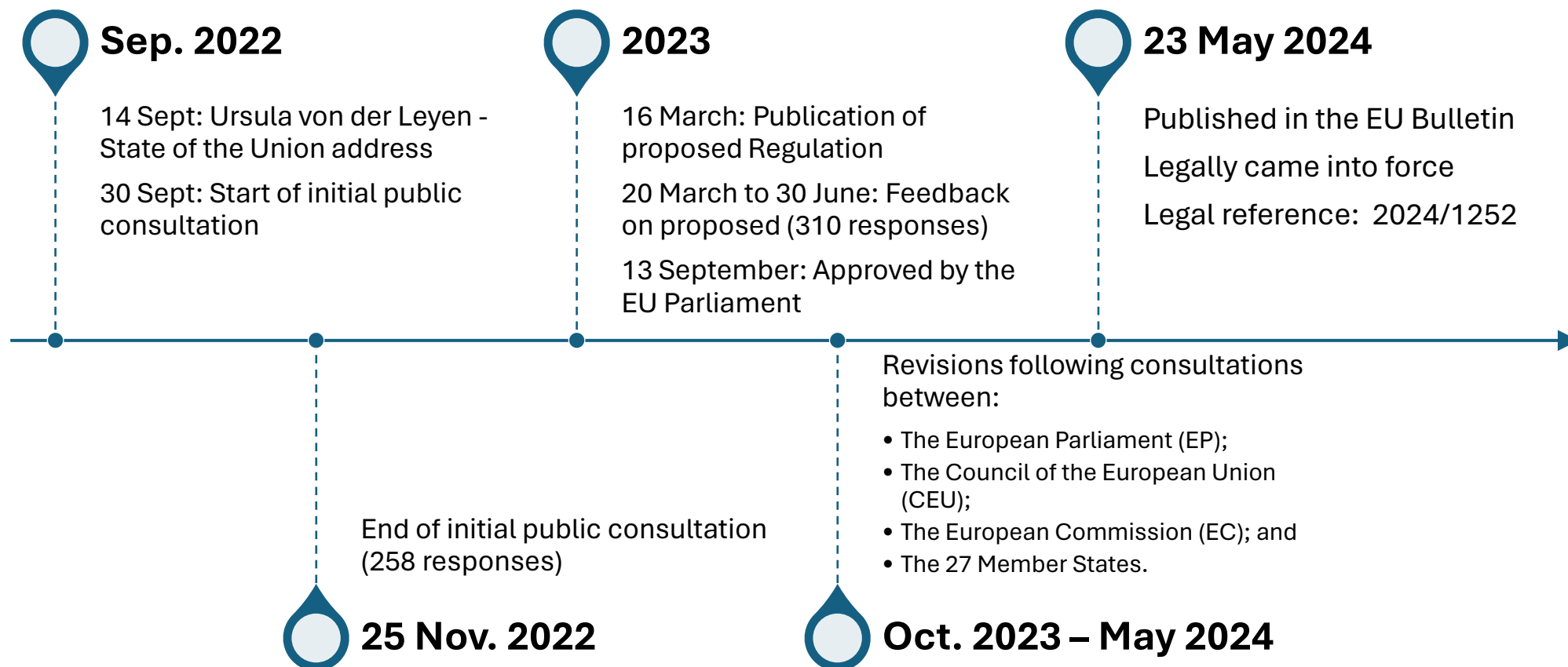


Figure 11 National resource reporting codes in countries covered by the ORAMA project

# The EU's Critical Raw Materials Act (CRMA)



Further information:

[https://single-market-economy.ec.europa.eu/sectors/raw-materials/areas-specific-interest/critical-raw-materials/critical-raw-materials-act\\_en](https://single-market-economy.ec.europa.eu/sectors/raw-materials/areas-specific-interest/critical-raw-materials/critical-raw-materials-act_en)

Official EU legal text (available in all EU languages): [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L\\_202401252](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L_202401252)

## Important elements

- List of Critical Raw Materials (CRMs – total of 34)
- List of Strategic Raw Materials (SRMs – total of 17)
- Strategic Projects (SPs)
- Strategic Partnerships (SPSs)

## EU targets for SRMs

- No single non-EU country should supply >65% of an SRM
- Extract  $\geq 10\%$  of SRM source materials within EU where possible
- Produce  $\geq 50\%$  of the EU's SRM consumption
  - Up to 20% of new processing capacity outside EU (SPSs)
- Recycling to produce +10% of SRM supply
- Collect, sort & process 45% of SRM waste

See IGI (2024) for a useful factsheet: <https://igi.ie/assets/uploads/2024/06/EU-Critical-Raw-Materials-Act-Factsheet-Institute-of-Geologists.pdf>



# Critical & Strategic raw materials

1 H hydrogen																	2 He helium				
3 Li lithium	4 Be beryllium	Periodic Table of the Elements														5 B boron	6 C <sup>o</sup> carbon	7 N nitrogen	8 O oxygen	9 F <sup>o</sup> fluorine	10 Ne neon
11 Na sodium	12 Mg magnesium															13 Al <sup>*</sup> aluminum	14 Si <sup>!</sup> silicon	15 P <sup>-</sup> phosphorus	16 S sulfur	17 Cl chlorine	18 Ar argon
19 K potassium	20 Ca calcium	21 Sc scandium	22 Ti titanium	23 V vanadium	24 Cr chromium	25 Mn manganese	26 Fe iron	27 Co cobalt	28 Ni nickel	29 Cu copper	30 Zn zinc	31 Ga gallium	32 Ge germanium	33 As arsenic	34 Se selenium	35 Br bromine	36 Kr krypton				
37 Rb rubidium	38 Sr strontium	39 Y yttrium	40 Zr zirconium	41 Nb niobium	42 Mo molybdenum	43 Tc technetium	44 Ru ruthenium	45 Rh rhodium	46 Pd palladium	47 Ag silver	48 Cd cadmium	49 In indium	50 Sn tin	51 Sb antimony	52 Te tellurium	53 I iodine	54 Xe xenon				
55 Cs cesium	56 Ba <sup>^</sup> barium	71 Lu lutetium	72 Hf hafnium	73 Ta tantalum	74 W tungsten	75 Re rhenium	76 Os osmium	77 Ir iridium	78 Pt platinum	79 Au gold	80 Hg mercury	81 Tl thallium	82 Pb lead	83 Bi bismuth	84 Po polonium	85 At astatine	86 Rn radon				
87 Fr francium	88 Ra radium	103 Lr lawrencium	104 Rf rutherfordium	105 Db dubnium	106 Sg seaborgium	107 Bh bohrium	108 Hs hassium	109 Mt meitnerium	110 Ds darmstadtium	111 Rg roentgenium	112 Cn copernicium	113 Nh nihonium	114 Fl flerovium	115 Mc moscovium	116 Lv livermorium	117 Ts tennessine	118 Og oganeson				

\* As bauxite, feldspar, alumina and aluminum  
^ As baryte  
° As coking coal, natural graphite and synthetic graphite  
- As fluorspar  
° As phosphate rock and phosphorus  
! As silicon metal

57 <b>La</b> lanthanum	58 <b>Ce</b> cerium	59 <b>Pr</b> praseodymium	60 <b>Nd</b> neodymium	61 <b>Pm</b> promethium	62 <b>Sm</b> samarium	63 <b>Eu</b> europium	64 <b>Gd</b> gadolinium	65 <b>Tb</b> terbium	66 <b>Dy</b> dysprosium	67 <b>Ho</b> holmium	68 <b>Er</b> erbium	69 <b>Tm</b> thulium	70 <b>Yb</b> ytterbium
89 <b>Ac</b> actinium	90 <b>Th</b> thorium	91 <b>Pa</b> protactinium	92 <b>U</b> uranium	93 <b>Np</b> neptunium	94 <b>Pu</b> plutonium	95 <b>Am</b> americium	96 <b>Cm</b> curium	97 <b>Bk</b> berkelium	98 <b>Cf</b> californium	99 <b>Es</b> einsteinium	100 <b>Fm</b> fermium	101 <b>Md</b> mendelevium	102 <b>No</b> nobelium

## Key

**Critical Raw Material**

**Critical Raw Material & Strategic Raw Material**

Source IGI (2024): <https://igi.ie/assets/uploads/2024/06/EU-Critical-Raw-Materials-Act-Factsheet-Institute-of-Geologists.pdf>

- **Use of UNFC in the context of the Act**

- 1. National and transnational mineral information databases:
  - Harmonisation of data and information for different countries and potential sources of raw materials
- 2. Project Assessment and Monitoring:
  - Screening and ranking of projects for different ‘resources’ and industry sectors

- **References to UNFC in the Act**

- Applications by a ‘promotor’ for a project to be recognised as a Strategic Project
  - (Article 7(1b));
- Information to be provided to Commission by the Member States
  - (Article 19(6); Article 21(1); and Article 27(8)).

May 2024 Act: English: [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L\\_202401252](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202401252)

## Strategic Project (SP) requirements

### Article 7 – Application and Recognition: [SELECTED TEXT]

#### 1. Applications for recognition ..... shall include:

- (a) **relevant evidence** related to fulfilment of the criteria laid down in Article 6(1) [specifies the criteria for an SP];
- (b) **a classification of the project according to the United Nations Framework Classification for Resources, supported by appropriate evidence;**
- (c) **a timetable for the implementation** of the project, including an overview of the permits required for the project and the status of the corresponding permit granting process;
- (d) a plan containing measures to facilitate public acceptance including, where appropriate, measures to facilitate the meaningful involvement and active participation of affected communities,...

## **Article 7 – Application and Recognition: [SELECTED TEXT continued]**

*(f) a **business plan evaluating the financial viability of the project**;*

*(g) an estimate of the project's potential for **quality job creation** and the project's needs in terms of skilled workforce and a work plan to support upskilling and reskilling...*

*(h) for projects in third countries or in OCTs\* involving extraction, a plan to improve the environmental state of the affected sites after the end of exploitation.....*

*(j) for projects with the potential to affect indigenous peoples, a plan containing measures dedicated to a meaningful consultation of the affected indigenous peoples  
.....*

### **NOTE: Article 7(2)**

**By 24 November 2024, the Commission shall adopt an implementing act** establishing a single template to be used by project promoters for the applications referred to in paragraph 1 of this Article.

*The single template may indicate how the information referred to in paragraph 1 of this Article is to be expressed. That implementing act shall be adopted in accordance with the advisory procedure referred to in Article 39(2)*

NOTE \*: OCT = Overseas country or territory

May 2024 Act: English: [https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L\\_202401252](https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202401252)

# CRIRSCO- UNFC relationship

*The updated CRIRSCO Template to UNFC  
Bridging Document*

*(Based on the 2019 versions of both systems)*



## Guidance Note on the use of the Bridging Document between the CRIRSCO Template and UNFC



*Based on the CRIRSCO Template November 2019 version  
and UNFC (Update 2019)*

- I. INTRODUCTION
- II. BACKGROUND
- III. OVERVIEW OF SYSTEM CONTENTS
- IV. COMPETENCY AND QUALIFICATION REQUIREMENTS
- V. **MAPPING CRIRSCO TEMPLATE TO THE UNFC CATEGORIES AND SUB-CATEGORIES**
- VI. MAPPING UNFC 2019 TO THE CRIRSCO TEMPLATE 2019
- VII. References
- VIII. Appendix I: Key features of the CRIRSCO Template and the UNFC
- IX. Appendix II: Terminology
- + 3 Figures and 9 Tables

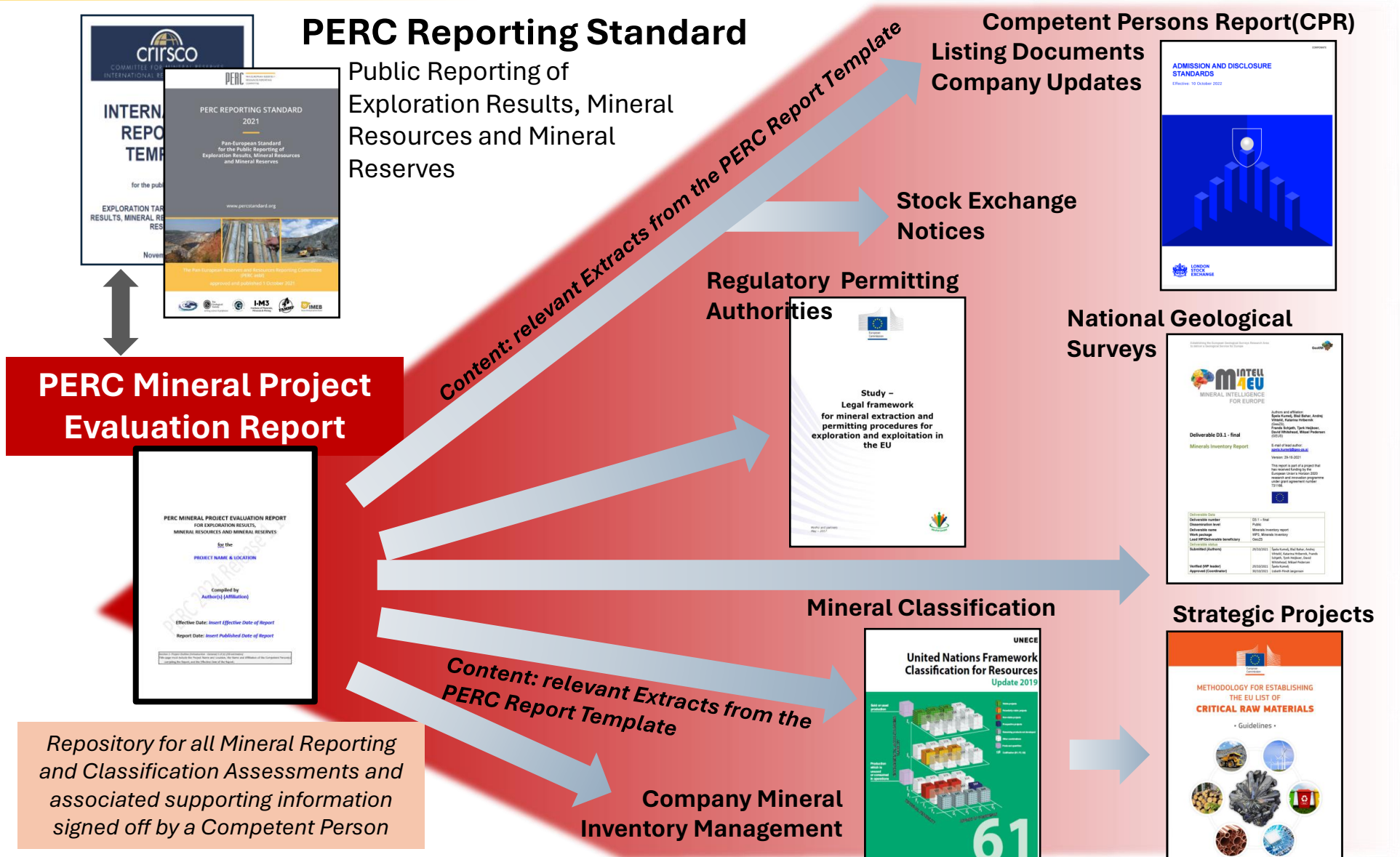


# Standard Mapping (Table 2)

CRIRSCO Template			Corresponding UNFC Category <sup>c</sup>			UNFC Class
Public Report and Study Types <sup>a</sup>	Standard Definitions					
Feasibility Study or Life of Mine Plan <sup>b</sup> (for an operating mine)	Mineral Reserves	Proved	E1	F1	G1	Viable Projects
		Probable			G2	
Pre-feasibility Study <sup>d</sup>	Mineral Reserves	Proved	E2	F2	G1	Potentially Viable Projects
		Probable			G2	
Feasibility Study, Life of Mine Plan <sup>b</sup> (for an operating mine) or Pre-feasibility Study <sup>e</sup>	Mineral Resources (exclusive of Mineral Reserves)	Measured	E2	F2	G1	
		Indicated			G2	
		Inferred			G3	
Scoping Study report or other Public Report on a Mineral Resource estimate <sup>f</sup>	Mineral Resources	Measured	E2	F2	G1	
		Indicated			G2	
		Inferred			G3	
Public Report on exploration stage projects	Exploration Target		E3	F3	G4	Prospective Projects
	Exploration Results		Estimates not published			
Not applicable <sup>g</sup>	Estimates obtained from historical reports <sup>h</sup>					Non-viable Projects

Source: [https://unece.org/sites/default/files/2024-04/CRIRSCO\\_Template\\_UNFC\\_BD\\_ECE\\_ENERGY\\_GE.3\\_2024\\_5\\_ENG.pdf](https://unece.org/sites/default/files/2024-04/CRIRSCO_Template_UNFC_BD_ECE_ENERGY_GE.3_2024_5_ENG.pdf)

# PERC's Mineral Project Evaluation Report Template



# Summary and conclusions

- Mineral Reporting systems provide information for:
  - State mineral information systems
    - UNFC
  - Stock markets and investors
    - CRIRSCO aligned codes & standards
- Important elements
  - Common terminology and/or numeric coding
  - Communicating uncertainty/risk
  - Principles: Transparency, Materiality & Competence
- CRIRSCO Template – UNFC relationship
  - Complementary systems – designed for different purposes
  - Bridging document facilitates their use together

- Addressing some of the limitations
  - Incorporating the time element
  - Estimating final product quantities
  - Reference point of estimation
- Tackling new challenges
  - Dealing with by-products / downstream products
- Practical application of ‘ESG’ aspects
  - Increasing public acceptance of mining in Europe
  - ‘Stream-lined’ permitting
  - Life Cycle assessment
  - Carbon border taxes

- Training / outreach
  - The PERC Reporting Standard and the UNFC
  - Using the CRIRSCO Template to UNFC Bridging Document
- Promotion
  - Promoting the use of the PERC Reporting Standard in Europe
- Developing guidance documents
  - Mineral Project Evaluation Report template
  - Integrated approach to mineral assessment
- Networking
  - Communicating with legislators and regulators
  - Facilitating dialogue between ‘government’ and the minerals industry
  - Liaising with the UNECE (UNFC)



# Additional information

*Provides links to some sources of further information*

- Video 1 – What is PERC?
  - [https://youtu.be/6m-FwDHV\\_8Q](https://youtu.be/6m-FwDHV_8Q) [2m 40s]
- Video 2 – Bre-X investor reflects: (see embedded video in the following article)
  - <https://www.cbc.ca/news/canada/edmonton/gold-bre-x-scandal-investment-movie-memories-alberta-1.3957034> [1m 23s]
- Video 3 – Navigating the PERC Reporting Standard
  - [https://youtu.be/U3hchp6tk\\_o](https://youtu.be/U3hchp6tk_o) [5m 13s]

- **Mineral Reporting Standards: PERC's Role in CRIRSCO and Its Relevance to the European Mining Sector**
  - Edmund Sides\* and Ruth Allington; Earth Sci. Syst. Soc., 27 March 2024
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  - Available at: <https://lnkd.in/ddtw-3Ep>
- **The PERC Summary Guide**
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